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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/783,522	02/20/2004	Roy Lurie	MWS-109RCE	7481

74321   7590   02/07/2008
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EXAMINER
WHALEY, PABLO S

ART UNIT	PAPER NUMBER
1631	

MAIL DATE	DELIVERY MODE
02/07/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

	Application No.	Applicant(s)
Office Action Summary	10/783,522	LURIE ET AL.
	Examiner	Art Unit	
	Pablo Whaley	1631	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on <u>24 October 2007</u>.

2a) ☐ This action is **FINAL**.   2b) ☒ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) <u>1-50</u> is/are pending in the application.

    4a) Of the above claim(s) <u>37-50</u> is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) <u>1-36</u> is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a) ☐ All b) ☐ Some * c) ☐ None of:

      1. ☐ Certified copies of the priority documents have been received.

      2. ☐ Certified copies of the priority documents have been received in Application No. _____.

      3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date _____.

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

Claims Under Examination

Claims 1-36 are under examination. Claims 37-50 are again withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected invention, there being no allowable generic or linking claim.

Withdrawn Rejections

The rejection of claims 1-11 and 28-36 under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement is withdrawn in view of applicant's arguments, filed 10/24/2007.

The rejection of claims 1-11 and 22-36 under 35 U.S.C. 112, second paragraph, is withdrawn in view of applicant's arguments, filed 10/24/2007.

The rejection of claims 1-2 and 10 under 35 U.S.C. 102 (b) as being anticipated by DelaFuente et al. (Proceedings of the Second International Conference on Systems Biology, Pasadena, California, 2001, p. 213-221), is withdrawn in view of applicant's amendments, filed 10/24/2007.

The rejection of claims 1-2, 10-14, 20, and 21 under 35 U.S.C. 103(a) as being made obvious by DelaFuente et al. (Proceedings of the Second International Conference on Systems Biology, Pasadena, California, 2001, p. 213-221), as applied to claims 1-2 and 10, above, in view of Bubendorf et al. (Journal of Pathology, 2001, Vol. 195, p.72-79) is withdrawn in view of applicant's amendments, filed 10/24/2007.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and

useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 1-36 are rejected under 35 U.S.C. 101 because these claims are drawn to non-statutory subject

matter.

Claims 1-36 are directed to a method and medium comprising instructions, and an apparatus

comprising computer readable program means for implementing instructions. The instant claims are

interpreted as a process, program, and apparatus (i.e. system)comprising a set of instructions (i.e.

process). For a process to be statutory, it must provide: (1) a practical application by physical

transformation (i.e. reduction of an article to a different state or thing), or (2) a practical application that

produces a concrete, tangible, and useful result [State Street Bank & Trust Co. v. Signature Financial

Group Inc. CAFC 47 USPQ2d 1596 (1998)], [AT&T Corp. v. Excel Communications Inc. (CAFC 50

USPQ2d 1447 (1999)]. As noted in State Street Bank & Trust Co. v. Signature Financial Group Inc.

CAFC 47 USPQ2d 1596 (1998), the statutory category of the claimed subject matter is not relevant to a

determination of whether the claimed subject matter produces a useful, concrete, and tangible result. The

question of whether a claim encompasses statutory subject matter should not focus on which of the four

categories of subject matter a claim is directed to a process, machine, manufacture, or composition of

matter--but rather on the essential characteristics of the subject matter, in particular, its practical utility.

Therefore, for a system and program that carry out a process to be statutory they must also provide a

concrete, tangible, and useful result.

In the instant case, the claimed invention as a whole does not recite a physical transformation of matter. Regarding claims 1-11 and 28-36, the instant claims comprise steps that do not result in a physical transformation of matter, as the claimed method steps are not limited to physical steps (i.e. steps done by a user), and therefore encompass non-physical method steps that may be practiced inside of a computer (i.e. *in-silico*). Where a claimed method does not result in a physical transformation of matter, it may be statutory where it recites a result that is concrete (i.e. reproducible), tangible (i.e. communicated to a user), and useful result (i.e. a specific and substantial). In the instant case, the claims ultimately result in "instructions for saving the modified model in a storage." This is not a tangible result as nothing is communicated in a user readable format such that it is useful to one skilled in the art. Furthermore, as claims 1-11 and 28-36 do not require a machine or computer readable medium, the claimed instructions are interpreted as non-functional descriptive material. Non-functional descriptive material stored on a recording medium is not statutory subject matter (e.g. music stored on a compact disk). For these reasons, the instant claims are not statutory. Regarding claims 12-27, the instant claims do recite a physical step (i.e. conducing an in situ experiment). However, the claimed invention as a whole results in "modifying the model...wherein the modified model is saved in a storage." This is not a tangible result as saving data does not equate to the communication of data in a user readable format such that it is useful to one skilled in the art. For these reasons, the instant claims are not statutory.

This rejection could be overcome by amendment of the claims to recite that a result of the process is outputted to a display, or to a user, or in a graphical format, or in a user readable format, or by including a result that is a physical transformation. The applicants are cautioned against introduction of new matter in an amendment. For an updated discussion of statutory considerations with regard to non-functional descriptive material and computer-related inventions, see the Guidelines for Patent Eligible Subject Matter in the MPEP 2106, Section IV. Furthermore, the claims must be limited only to statutory embodiments. The applicants are cautioned against introduction of new matter in an amendment, As well

as subject matter that reads on non-statutory embodiments of computer readable media drawn to carrier waves.

Response to Arguments

Applicant's arguments, filed 10/24/2007, that the claims are now statutory in view of the limitation "saving the modified model in a storage" have been fully considered but are not persuasive. The claims do not require an explicit physical transformation of a component of a computing device that is sufficient to establish that "storing" a statistical model to a computer is statutory subject matter under 35 U.S.C. 101. Furthermore, the claimed "instructions" do not impart any structural and functional interrelationship between itself and the computer components such that functionality is realized. Therefore, the instructions are interpreted as non-functional descriptive material stored on a computing device which is not statutory subject matter (e.g. music stored on a compact disk). For the reasons set forth above, the claims are not statutory. For an updated discussion of statutory considerations with regard to non-functional descriptive material and computer-related inventions, see the MPEP Section 2106.01.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C.102 that form the basis for the

rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

> (b) the invention was patented or described in a printed publication in this or a foreign country or
> in public use or on sale in this country, more than one year prior to the date of application for
> patent in the United States.

> (e) the invention was described in (1) an application for patent, published under section 122(b),
> by another filed in the United States before the invention by the applicant for patent or (2) a
> patent granted on an application for patent by another filed in the United States before the
> invention by the applicant for patent, except that an international application filed under the treaty
> defined in section 351(a) shall have the effects for purposes of this subsection of an application
> filed in the United States only if the international application designated the United States and
> was published under Article 21(2) of such treaty in the English language.

Claims 1-9, 22, 23, 25-27, 28-30, and 32-36 remain rejected under 35 U.S.C. 102 (b) as being anticipated

by Goryanin et al. (Bioinformatics, 1999, Vol. 15, No. 9, p.749-758).

Goryanin et al. teach a system and computer program (i.e. instructions) *DBsolve* for mathematical

simulation and analysis of cellular metabolism and regulation. Goryanin et al. teach the following aspects

of the instantly claimed invention:

- Analysis models (i.e. simulation engines) model metabolic pathways, receive input, generate

  output, and display results via the operably connected model designer [Fig. 1 and Fig. 3], as in

  instant claims 1-3, and 5, and instant claims 28-30, and 32.

- Fitter/Optimizer environment (i.e. analysis environment) in communication with said simulation engine and comparing model data to experimental data for optimization [Fig. 1] and [p.753, Col. 2, ¶ 2], as in instant claims 1 and 28.

- DBsolve provides instructions for model refinement based on a comparison of the applied model parameters (i.e. expected results) with observed experimental data [See p.753, Col. 1, ¶2 and Fig. 1].

- DBsolve also provides functions for saving or transferring models or data files [See p.750, Col. 1, ¶2 and Fig. 4A].

- Fitter/Optimizer generates an optimized curve (i.e. event) when the difference between experimental and theoretical data points is calculated according to an absolute value [p.755, Col. 1, ¶ 1], which equates to generating an event as in instant claim 4.

- Model Designer (i.e. modeling environment) in communication with said analysis models and Fitter/Optimizer [Fig. 1] comprising constructing a model and a GUI for accessing the model and accepting user commands [Fig. 2], as in instant claims 5-9 and 32-36.

- Input of experimental data for refining the biological model [p.753, Col. 2, ¶ 2], as in instant claims 1 and 9. Furthermore, the use of experimental data is implicitly a teaching for data gathered from "experimental platform" and/or "experimental device", as recited in instant claims 1, 11, 28, and 35, as experimental data is inherently obtained from an experimental devices.

- *DBsolve* is computer-readable program (i.e. article of manufacture) functionally operating on a computer system to carry out the above method steps, therefore claims 22, 23, and 25-27, which recite identical limitations as above, are also anticipated.

Claims 1, 12-19, 21, 24, 28, and 31 rejected under 35 U.S.C. 102 (e) as being anticipated by·Potts et al. (US Pat. No. 6,882,940; Filed Aug. 10, 2001).

Potts et al. teach computer programs for predicting a hypoglycemic event in a subject [Abstract]. The

system comprises a device, microprocessors, and software (i.e. instructions) for obtaining measured data

values and microprocessors for generating predicted glucose measurement values (i.e. expected results)

[Col. 3, lines 40-60], and comparing skin conductance readings (i.e. in situ experimental data) with

threshold values to determine hypoglycemic events (i.e. expected results) [Reference claims 1 and 25], as

in instant claims 1 and 12. The system allows for the storage of data to memory [Col. 16, lines 55-65].

Potts et al. also teach an alert signal (i.e. event signal) generated when glucose amount is outside of the

predetermined range of values [Co. 7, lines 20-23], as in instant claims 15, 24, and 31. Potts et al. also

teach a prediction system (i.e. modeling environment) allowing for user-settable threshold levels [Col. 13,

lines 20-25], which is a teaching for modifying the model based on optimization means (i.e.

thresholding), as in claim 12. Therefore, the Examiner has interpreted the "comparing, by an analysis

environment" limitation to encompass the teachings of Potts et al. Methods for extracting glucose from a

subject glucose into reservoirs and techniques and/or devices for generating glucose data [Col. 3, lines 25-

35], which is interpreted as gathering and analyzing in situ data, as in claims 12 and 22. The system

provides for the display of data, operative connection of it units, wireless transmission of data [Col. 18,

lines 5-25], as in instant claims 13, 14, and 18. The Glucowatch prediction system (i.e. modeling

environment) allows for user-settable threshold levels [Col. 13, lines 20-25] and comprising an LCD

screen and user interface [Col. 16, lines 60-65], as in instant claims 16-17. A predictive Taylor-Series

expansion model for adjusting glucose values to predict future values [Equation (7), Reference claim 7],

which is a teaching for generating a refined model as in instant claim 19. The GlucoWatch biographer

comprises a microprocessor (i.e. analyte monitoring device and display unit) for measuring and analyzing

glucose levels from a subject via ionophoresis [Col. 7, lines 15-23], which is a teaching for in situ

experimentation and a device as in instant claim 21. For these reasons and those set forth above, the

Examiner maintains that Potts et al. indeed teach all of the limitations of claims 12-19, 21, 24, 28, and 31.

Response to Rejections

Applicant's arguments, filed 10/24/2007, that Goryanin et al. does not disclose executable

instructions for comparing the expected result to data gathered from an in situ experiment has been fully

considered but is not persuasive. Applicant's arguments, filed 10/24/2007, that Goryanin et al. does not

disclose data gathered from an in situ experiment of a biological process conducted on an experimental

device has been fully considered but is not persuasive. Applicant's arguments, filed 10/24/2007, that

Goryanin et al. does not disclose computer-readable program means for gathering data relating to an in-

situ experiment and comparing the expected result to data gathered from an in situ experiment has been

fully considered but is not persuasive. In response aggregate arguments, DBsolve is a computer program,

which inherently contains computer-readable program means and clearly allows for input from multiple

external experimental data sources [See Fig. 1]. DBsolve provides instructions for model refinement by

comparing the applied model parameters (i.e. expected results) with observed experimental data [See

p.753, Col. 1, ¶2 and Fig. 1]. The program allows for input of experimental data for analysis [See Fig. 1],

which is interpreted as instructions for gathering data. Although Goryanin et al. is silent to the term "in

situ" experiments, this term is well known to refer to the examination of phenomenon exactly in the place

where it occurs. Because the claims are drawn to analysis in a computer device and do not require active

methods steps directed to conducting "in situ" experimentation, the experimental data obtained from

saturation experiments [p.757, Col. 2 and Fig. 4A] taught by Goryanin is interpreted as "in situ" data

which is gathered using a computer (i.e. experimental device) [Fig. 1]. This rejection is maintained.

Applicant's arguments, filed 10/24/2007, that Potts et al. fail to disclose "comparing, by an analysis

environment, the generated expected result to data gathered from said experimental device" have been

considered but are not persuasive. The basis of applicant's argument is that the threshold values taught by

Potts do not equate to "expected results" since they are not generated by a predictive engine. However,

Potts teaches that the prediction of hypoglycemic events, which are interpreted by the Examiner as

expected results, are clearly based on the comparative evaluation of thresholds of selected parameters,

where the thresholds are indicative of a hypoglycemic event and are based on current readings as well as

predicted readings (Col. 4, lines 25-40). This rejection is maintained.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness

rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

> This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1, 10, 11, and 20 are rejected under 35 U.S.C. 103(a) as being made obvious by Goryanin et al.

(Bioinformatics, 1999, Vol. 15, No. 9, p.749-758), in view of Bubendorf et al. (Journal of Pathology,

2001, Vol. 195, p.72-79).

Goryanin et al. teach a system and computer program (i.e. instructions) *DBsolve* for mathematical simulation and analysis of cellular metabolism and regulation. Goryanin et al. teach the following aspects of the instantly claimed invention:

- Analysis models (i.e. simulation engines) model metabolic pathways, receive input, generate output, and display results via the operably connected model designer [Fig. 1 and Fig. 3], as in instant claims 1-3, and 5, and instant claims 28-30, and 32.

- Fitter/Optimizer environment (i.e. analysis environment) in communication with said simulation engine and comparing model data to experimental data for optimization [Fig. 1] and [p.753, Col. 2, ¶ 2], as in instant claims 1 and 28.

- DBsolve provides instructions for model refinement based on a comparison of the applied model parameters (i.e. expected results) with observed experimental data [See p.753, Col. 1, ¶2 and Fig. 1].

- DBsolve also provides functions for saving or transferring models or data files [See p.750, Col. 1, ¶2 and Fig. 4A].

- Fitter/Optimizer generates an optimized curve (i.e. event) when the difference between experimental and theoretical data points is calculated according to an absolute value [p.755, Col. 1, ¶ 1], which equates to generating an event as in instant claim 4.

- Model Designer (i.e. modeling environment) in communication with said analysis models and Fitter/Optimizer [Fig. 1] comprising constructing a model and a GUI for accessing the model and accepting user commands [Fig. 2], as in instant claims 5-9 and 32-36.

- Input of experimental data for refining the biological model [p.753, Col. 2, ¶ 2], as in instant claims 1 and 9. Furthermore, the use of experimental data is implicitly a teaching for data gathered from "experimental platform" and/or "experimental device", as recited in instant claims 1, 11, 28, and 35, as experimental data is inherently obtained from an experimental devices.

- *DBsolve* is computer-readable program (i.e. article of manufacture) functionally operating on a computer system to carry out the above method steps, therefore claims 22, 23, and 25-27, which recite identical limitations as above, are also anticipated.

Goryanin et al. do not specifically teach the use of in situ data obtained from microarrays, as recited in claims 10, 11, and 20.

Bubendorf et al. teach a method of high-throughput *in situ* experimentation using tissue microarrays (TMA) technology [Abstract]. Bubendorf et al. also teach the display of in situ TMA experiments in patient samples [Fig. 5] and related data sets [Table 1], as in instant claims 12 and 20.

It would have been obvious to someone of ordinary skill in the art at the time of the instant invention to use the computer analysis program of Goryanin et al. in combination with the microarray data sets taught by Bubendorf et al, since Goryanin et al. suggest their model can analyze data from various experimental sources [Fig. 1]. One of ordinary skill in the art would have been motivated to combine the above teachings in order to accelerate tumor research using high-throughput in situ technologies [Bubendorf et al., Abstract], resulting in the practice of the instant claimed invention with predictable results.

Response to Arguments

Applicant's arguments, filed 10/24/2007, that DelaFuente et al. do not teach "gathering" data from an in situ experiment and "comparing" the expected result to the data gathered from said experimental device are moot in view of the new grounds of rejections.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Pablo Whaley whose telephone number is (571)272-4425. The examiner can normally be reached on 9:30am - 6pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Marjorie Moran can be reached at 571-272-0720. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Pablo S. Whaley/   **/John S. Brusca/**

Patent Examiner   Primary Examiner

Art Unit 1631   Art Unit 1631